

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-33 (Canceled).

Claim 34 (New): A method of supporting a user in mechanically analyzing a performance of an object, using an input device, a display device having a screen for display, and a computer connected to the input device and the display device, the method comprising:

graphically displaying on the screen a generalized model which is constructed as a numerical analysis model for the object such that the generalized model has been generalized with respect to at least one of a configuration, a structure, and a mechanism, of the object, and has been specialized with respect to a function of the object;

data-entry displaying on the screen an item for letting the user enter data using the input device in order to define a specialized model which is constructed as a numerical analysis model for the object by specializing the displayed generalized model with respect to the at least configuration thereof; and

mechanically analyzing the performance of the object, on the basis of the specialized model defined by the data entered by the user in association with the displayed item, a numerical analysis approach predetermined in accordance with the function of the object, and a numerical analysis condition determined by the user or predetermined as a standard condition,

wherein the object is a subject one of a plurality of components of a single product, which subject component has been selected by the user,

wherein the generalized model is a subject generalized-model corresponding to the subject component,

wherein the subject generalized-model is one of a plurality of numerical analysis models respectively for the plurality of components,

wherein each numerical analysis model has been generalized with respect to at least one of a configuration, a structure, and a mechanism, of each component of the object,

wherein each numerical analysis model has been specialized with respect to a function of each component of the object,

wherein the graphically displaying comprises displaying the plurality of components distinguishably from each other on the screen, displaying an indication on the screen for letting the user select as the subject component one of the plurality of components, and graphically displaying on the screen one of the plurality of generalized models which corresponds to the subject component which has been selected by the user in response to the indication, and

wherein the mechanically analyzing comprises mechanically analyzing a performance of the subject component, on the basis of the specialized model defined by data which have been entered by the user in association with the displayed item on the screen, the numerical analysis approach predetermined in accordance with the function of the subject component, and the numerical analysis condition.

Claim 35 (New): The method according to claim 34, wherein each numerical analysis model has a plurality of features representing geometrical properties of the object in the form of a node having an attribute thereof and a discrete element having an attribute thereof.

Claim 36 (New): The method according to claim 34, wherein the mechanically analyzing comprises mechanically analyzing the performance of the object by directly using the specialized model.

Claim 37 (New): The method according to claim 34, wherein the item is configured to let the user enter using the input device, data for specializing the generalized model with respect to at least one of a configuration, a structure, and a mechanism, of the generalized model.

Claim 38 (New): The method according to claim 34, wherein the data-entry displaying comprises figure displaying on the screen, in association with the displayed generalized model, a figure for supporting the user in graphically entering data for the item.

Claim 39 (New): The method according to claim 38, wherein:
the item is configured to let the user enter numerical data; and
the figure displaying comprises numerical-data-entry displaying on the screen a figure which supports the user in graphically entering the numerical data in association with the item.

Claim 40 (New): The method according to claim 39, wherein:
the input device comprises a pointing device thereof; and
the numerical-data-entry displaying comprises displaying at least one of a bar, a pointer, or a cursor which is moved on the screen depending on an amount by which the user operates the pointing device of the input device, and which lets numerical data enter into the computer depending on an amount by which the bar, the pointer, or the cursor has been moved, with respect to the item, to thereby support the user in entering the numerical data into the computer.

Claim 41 (New): The method according to claim 39, wherein:

the input device comprises a keyboard thereof; and
the data-entry displaying further includes,
keyboard-indicator displaying on the screen of an indication letting the user directly
enter the numerical data by operating the keyboard of the input device, and
selectively effecting the figure displaying and the keyboard-indicator displaying.

Claim 42 (New): The method according to claim 34, wherein the mechanically
analyzing comprises resultant-analysis displaying on the screen in association with the object
analysis results obtained from each numerical analysis model.

Claim 43 (New): The method according to claim 42, wherein:
the analysis results comprise mechanical characteristic values for a segment of the
object; and
the resultant-analysis displaying comprises graphically displaying on the screen each
one of the mechanical characteristic values, in the form of a figure which is changed in at
least one of a size, a configuration, a pattern, and a color, of the figure, depending on a
magnitude of each one of the mechanical characteristic values.

Claim 44 (New): The method according to claim 42, wherein the mechanically
analyzing further comprises:
numerically displaying the analysis results on the screen; and
selectively effecting the resultant-analysis displaying and the numerically displaying.

Claim 45 (New): The method according to claim 34, wherein each of a plurality of
sets of data representative of the generalized model, the specialized model, the numerical

analysis approach, and the numerical analysis condition, respectively, has been constructed in an executable format in which each set of data can be executed by an operating system installed in the computer, without causing the computer to execute a special application program.

Claim 46 (New): A computer program to be executed by a computer to implement the method according to claim 34.

Claim 47 (New): A computer-readable storage medium having stored therein the computer program according to claim 46.

Claim 48 (New): A method of supporting a user in mechanically analyzing a performance of an object, using an input device, a display device having a screen for display, and a computer connected to the input and the display device, the method comprising:

providing construction support implemented before a specialized model has been defined by the user's converting a generalized model into the specialized model,

wherein the generalized model serves as a numerical analysis model for the object, has been generalized with respect to at least configuration of a configuration, a structure, and a mechanism, of the object,

wherein the generalized model has been specialized with respect to a function of the object,

wherein the generalized model has a plurality of features representing geometrical properties of the object in the form of a node having an attribute thereof and a discrete element having an attribute thereof, the specialized model is obtained by specializing the generalized model with respect to the at least configuration,

wherein the providing construction support is implemented to display on the screen an indication which supports the user in constructing the generalized model by the user's defining the node and the discrete element using the input device, and includes,

defining a node location to be established, in response to an action that the user identifies, on the screen using the input device, displaying a node figure representative of being the node, at the identified location; and, in response to an action that the user indicates the displayed node figure, displaying a first support indication which supports the user in setting the attribute of the node which has been represented by the displayed node figure, and

defining a discrete element definition including a location at which the discrete element is to be established, in response to an action that the user identifies on the screen using the input device, displaying a discrete element figure representative of being the discrete element, at the identified location, and, in response to an action that the user indicates the displayed discrete element figure, displaying a second support indication which supports the user in setting the attribute of the discrete element which has been represented by the displayed discrete element figure.

Claim 49 (New): The method according to claim 48, wherein:

the discrete element comprises a beam element having an attribute thereof;

the attribute of the beam element comprises at least one of a cross-section shape of a real member represented by the beam element, a thickness of the real member, and a material property of the real member; and

the defining a discrete element definition comprises defining a beam- element definition including a location at which the beam element is to be established, in response to an action that the user identifies on the screen using the input device, displaying a beam- element figure representative of being the beam element, at the identified location; and, in

response to an action that the user indicates the displayed beam-element figure, displaying as the second support indication, an indication which supports the user in setting the attribute of the beam element which has been represented by the displayed beam-element figure.

Claim 50 (New): The method according to claim 49, wherein:

the attribute of the beam element comprises a cross-section shape of the real member represented by the beam element; and

the method further comprises displaying a cross-section shape, once the user sets the cross-section shape depending on the second support indication, that graphically displays the set cross-section shape on the screen.

Claim 51 (New): The method according to claim 48, wherein:

the discrete element comprises a panel element having an attribute thereof;

the attribute of the panel element comprises at least one of a thickness of a real member represented by the panel element, and a material property of the real member; and

the defining a discrete element definition comprises defining a panel-element definition including a location at which the panel element is to be established, in response to an action that the user identifies on the screen using the input device, displaying a panel-element figure representative of being the panel element at the identified location, and, in response to an action that the user indicates the displayed panel-element figure, displaying as the second support indication, an indication which supports the user in setting the attribute of the panel element which has been represented by the displayed panel-element figure.

Claim 52 (New): The method according to claim 48, wherein:

the discrete element comprises a design domain, a structure of which is intended to be designed by a topology optimization for achieving a required function, the design domain has an attribute thereof;

the attribute of the design domain comprises a condition on the structure to be adapted to the design domain; and

the defining a discrete element definition comprises defining a design-domain definition including a location at which the design domain is to be established, in response to an action that the user identifies on the screen using the input device, displaying a design-domain figure representative of being the design domain at the identified location, and, in response to an action that the user indicates the displayed design-domain figure, displaying as the second support indication an indication which supports the user in setting the attribute of the design domain which has been represented by the displayed design-domain figure.

Claim 53 (New): The method according to claim 48, wherein:

the object is a product constructed by a combination of a plurality of parts;

an organizational relationship according to which the plurality of parts are associated with each other is hierarchal; and

the method further includes,

constructing a whole generalized-model construction, when the user sets the organizational relationship using the input device, in response to an event that the generalized model has been constructed for each of the plurality of parts as a partial generalized-model; and

integrating a plurality of partial generalized-models respectively constructed for the plurality of parts, according to the set organizational relationship, to thereby automatically construct a whole generalized-model representative of the whole of the product.

Claim 54 (New): The method according to claim 48, further comprising:
storing into a memory of the computer, as a template, procedures in which the generalized model has been constructed by the user using the input device; and
in response to a specific command from the user, reading out the template from the memory for thereby automatically reconstructing the same generalized model.

Claim 55 (New): The method according to claim 48, wherein each of a plurality of sets of data representative of the generalized model, the specialized model, the numerical analysis approach, and the numerical analysis condition, respectively, has been constructed in an executable format in which the each set of data can be executed by an operating system installed in the computer, without causing the computer to execute a special application program.

Claim 56 (New): A computer program to be executed by a computer to implement the method according to claim 48.

Claim 57 (New): A computer-readable storage medium having stored therein the computer program according to claim 56.